CHARLES UNIVERSITY IN PRAGUE

FACULTY OF PHARMACY IN HRADEC KRÁLOVÉ

DEPARTMENT OF PHARMACEUTICAL CHEMISTRY AND DRUG CONTROL

Title: Synthesis of the 3rd generation of photosensitizers based on phthalocyanine core

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Abstract:

In my thesis, I deal with synthesis of the photosensitizers based on phtalocyanine core. These PS have advantageous photophysical properties and they have promising properties for future for preparation of PS with targeted distribution after connection to the appropriate carrier. My work was to investigate the most suitable procedures for the synthesis of target compounds.

I prepared 4,5-bis(*tert*-butylsulfanyl)phthalonitrile from 2-methylpropane-2-thiol and 4,5-dichlorophthalonitril by nucleophilic substitution. I use this phthalonitril together with 2,3-dicyanoquinoxaline-6-carboxylic acid for synthesis of symmetrical and asymmetrical phthalocyanines.

I prepared unsymmetrical zinc phthalocyanine containing one carboxy group. I tried the method of cyclization with zinc acetate in quinoline, but the reaction proved to be ineffective. Therefore, I have gone into the synthesis of phthalocyanine over its magnesium analogue. I demetalated the magnesium Pc by *p*-toluenesulphonic acid and subsequently I inserted central zinc with the use of zinc acetate.

Since we wanted to examine the properties of tetraquinoxalinporphfyrazin core as well, I prepared the symmetrical molecule with this core substituted with four carboxy groups on the periphery. Unfortunately, this dye proved to be insoluble and therefore of no further interest.